

Data, Be Like Water

Splunk Developer Platform

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Today

- Let's talk about data
- Customers developing on Splunk
- Partner story
- Getting started

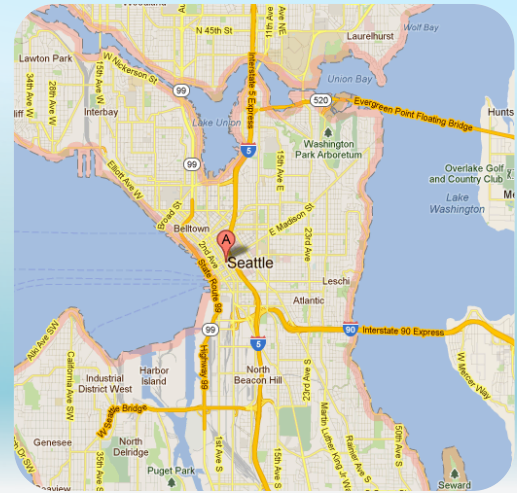
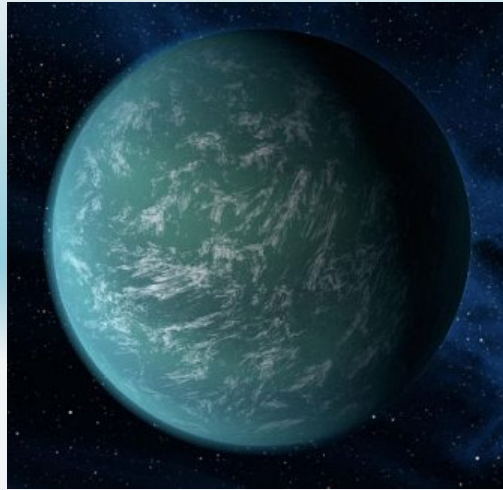
More than just a metaphor for today...

- My hotel room @ 4:45 am this morning...





About me...



```

WORKING-STORAGE SECTION.
01  Num1          PIC 9  VALUE ZEROS.
01  Num2          PIC 9  VALUE ZEROS.
01  Result        PIC 99 VALUE ZEROS.
01  Operator      PIC X  VALUE SPACE.

```

```

public void login()
{
    // first login

    Map<String, Object> sargs = new HashMap<String, Object>();
    sargs.put("host", "localhost");
    sargs.put("port", 8089);
    sargs.put("scheme", "https");

    System.out.println("before putting app on the args");

    sargs.put("app", "search");

    Service service = Service.connect(sargs);

    System.out.println("after calling connect argument with app on the args");

    service.login("admin", "changed");

    ServiceInfo serviceInfo = service.getInfo();
    System.out.println(serviceInfo.getVersion());
}

```

splunk® > About us...

- Over 3,000 customers
- Data usage in TBs per day






- **Scenarios**

App monitoring

Security

IT Ops

Analytics & more...

Customer	Data/Day
	6 TB
	4 TB
	1.2TB
	900 GB
	800 GB

splunk® > Developer Platform

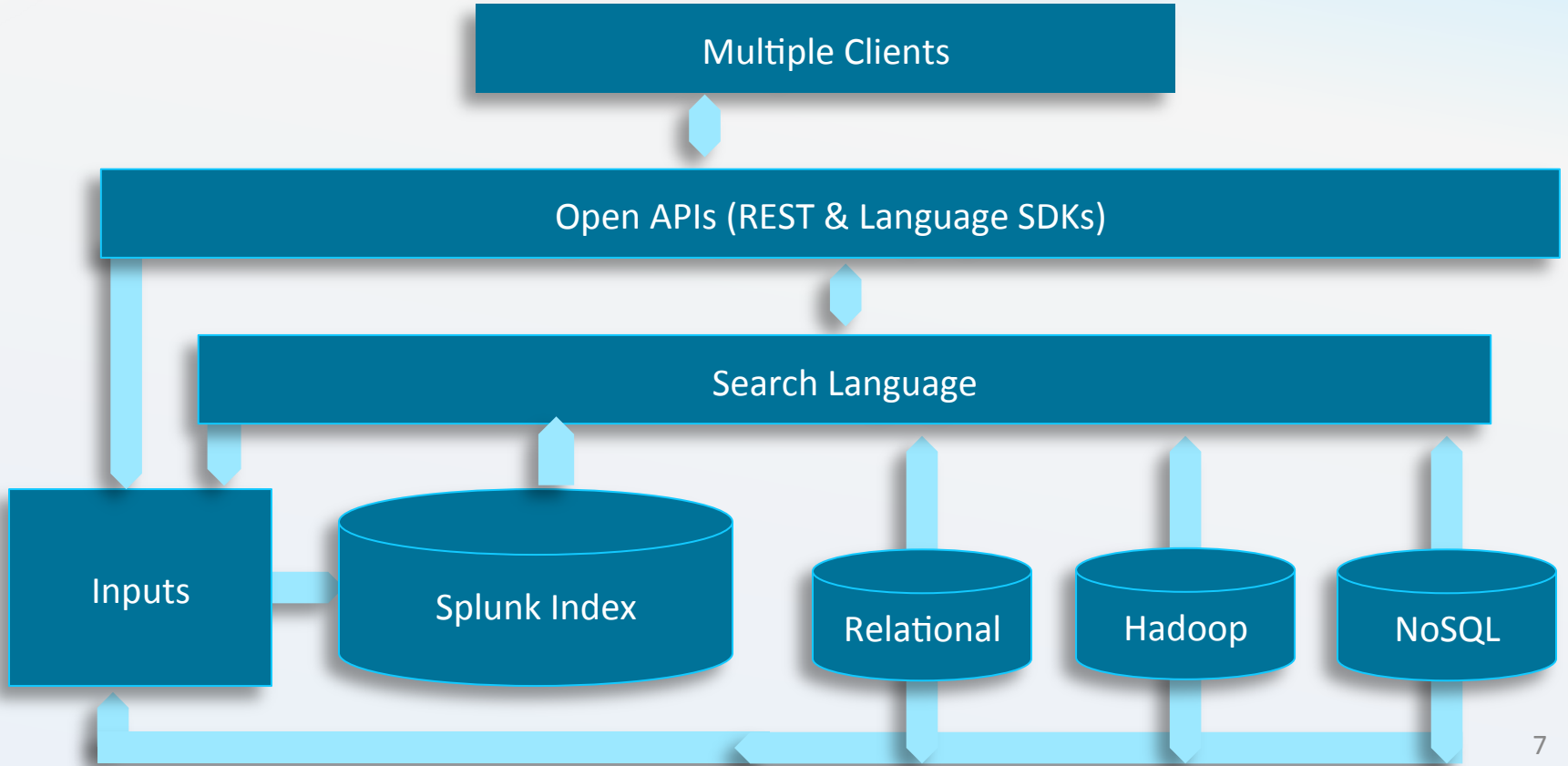
- Create ecosystem of developers
- Java, Python, JavaScript, & Ruby SDKs
- Actively engage in the community



REST for the wicked



High-level architecture



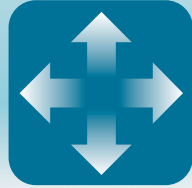
The dynamics of data



“Water can flow... Be water, my friend”

Bruce Lee

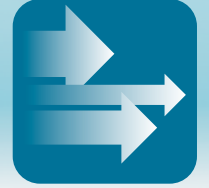
The 3Vs of Big Data



Volume

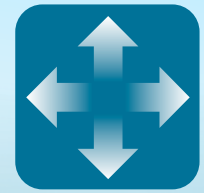


Variability



Velocity

Past: Data were still and small



Volume

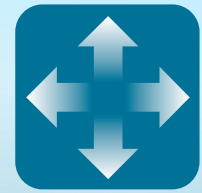


ST-505 5MB

1GB = \$307,000



Today: Ubiquitous storage = opportunity

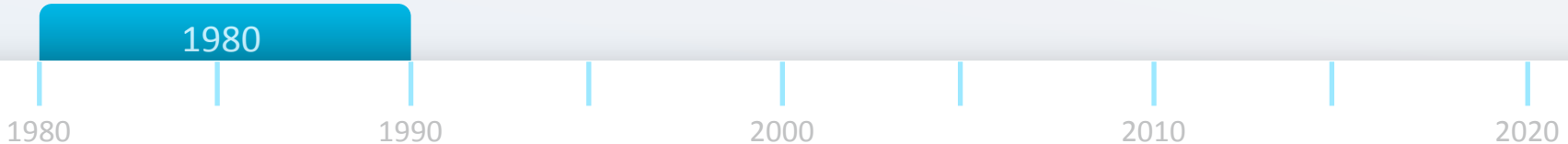


Volume



1GB = \$0.10

Seagate – 1TB



Networks & the web



Variability

- Data exhaust

```
access_combined.log
177.23.21.50 - - [13/Feb/2012:00:07:45] "GET /f_lower_store/category.screen?category_id=PLANTS HTTP/1.1" 200 18567 "http://mystore.splunk.com/f_lower_store/cart.do?action=purchase&itemId=EST-18&JSESSIONID=SD7SL1FF9ADFF2" "Mozilla/5.0
(X11; U; Linux i686; en-US; rv:1.8.0.10) Gecko/20070223 CentOS/1.5.0.10-0.1.el4.centos Firefox/1.5.0.10" 194 979
10.2.91.32 - - [13/Feb/2012:00:08:00] "GET /f_lower_store/product.screen?product_id=FI-FW-02 HTTP/1.1" 200 19901 "http://mystore.splunk.com/f_lower_store/category.screen?category_id=BALLOONS&JSESSIONID=SD7SL1FF9ADFF2" "Mozilla/5.0
(X11; U; Linux i686; en-US; rv:1.8.0.10) Gecko/20070223 CentOS/1.5.0.10-0.1.el4.centos Firefox/1.5.0.10" 2281 4609
192.0.1.50 - - [13/Feb/2012:00:09:29] "GET /f_lower_store/category.screen?category_id=FLOWERS HTTP/1.1" 200 18567 "http://mystore.splunk.com/f_lower_store/cart.do?action=purchase&itemId=EST-206&JSESSIONID=SD7SL1FF9ADFF2" "Mozilla/5.0
(X11; U; Linux i686; en-US; rv:1.8.0.10) Gecko/20070223 CentOS/1.5.0.10-0.1.el4.centos Firefox/1.5.0.10" 86 3297
233.77.49.30 - - [13/Feb/2012:00:10:00] "GET /f_lower_store/category.screen?category_id=FLOWERS HTTP/1.1" 200 18567 "http://mystore.splunk.com/f_lower_store/cart.do?action=purchase&itemId=EST-276&JSESSIONID=SD7SL1FF9ADFF2" "Mozilla/5.0
(X11; U; Linux i686; en-US; rv:1.8.0.10) Gecko/20070223 CentOS/1.5.0.10-0.1.el4.centos Firefox/1.5.0.10" 1804 2626
178.19.3.32 - - [13/Feb/2012:00:10:16] "GET /f_lower_store/category.screen?category_id=GIFTS HTTP/1.1" 200 18567 "http://mystore.splunk.com/f_lower_store/cart.do?action=purchase&itemId=EST-11&JSESSIONID=SD7SL1FF9ADFF2" "Mozilla/5.0
(X11; U; Linux i686; en-US; rv:1.8.0.10) Gecko/20070223 CentOS/1.5.0.10-0.1.el4.centos Firefox/1.5.0.10" 2827 4073
233.77.49.32 - - [13/Feb/2012:00:11:28] "GET /f_lower_store/cart.do?action=update&itemId=EST-19&JSESSIONID=SD7SL1FF9ADFF2&quantity=4&JSESSIONID=SD7SL1FF9ADFF2" "Mozilla/5.0 (X11; U; Linux i686; en-US; rv:1.8.0.10) Gecko/20070223 CentOS/1.5.0.10-0.1.el4.centos Firefox/1.5.0.10" 1204 2999
233.77.49.32 - - [13/Feb/2012:00:11:28] "GET /f_lower_store/category.screen?category_id=GIFTS HTTP/1.1" 200 18567 "http://mystore.splunk.com/f_lower_store/cart.do?action=purchase&itemId=EST-26&JSESSIONID=SD7SL1FF9ADFF2" "Mozilla/5.0
(X11; U; Linux i686; en-US; rv:1.8.0.10) Gecko/20070223 CentOS/1.5.0.10-0.1.el4.centos Firefox/1.5.0.10" 2512 1408
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(X11; U; Linux i686; en-US; rv:1.8.0.10) Gecko/20070223 CentOS/1.5.0.10-0.1.el4.centos Firefox/1.5.0.10" 3514 2974
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U; Linux i686; en-US; rv:1.8.0.10) Gecko/20070223 CentOS/1.5.0.10-0.1.el4.centos Firefox/1.5.0.10" 4217 708
10.32.1.45 - - [13/Feb/2012:00:12:00] "GET /f_lower_store/category.screen?category_id=CANDY HTTP/1.1" 200 18567 "http://mystore.splunk.com/f_lower_store/cart.do?action=purchase&itemId=EST-16&JSESSIONID=SD7SL1FF9ADFF2" "Mozilla/5.0
(X11; U; Linux i686; en-US; rv:1.8.0.10) Gecko/20070223 CentOS/1.5.0.10-0.1.el4.centos Firefox/1.5.0.10" 4129 1740
```

- New forms of storage



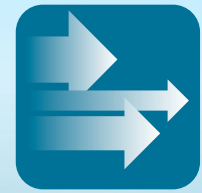
mongoDB



Cassandra

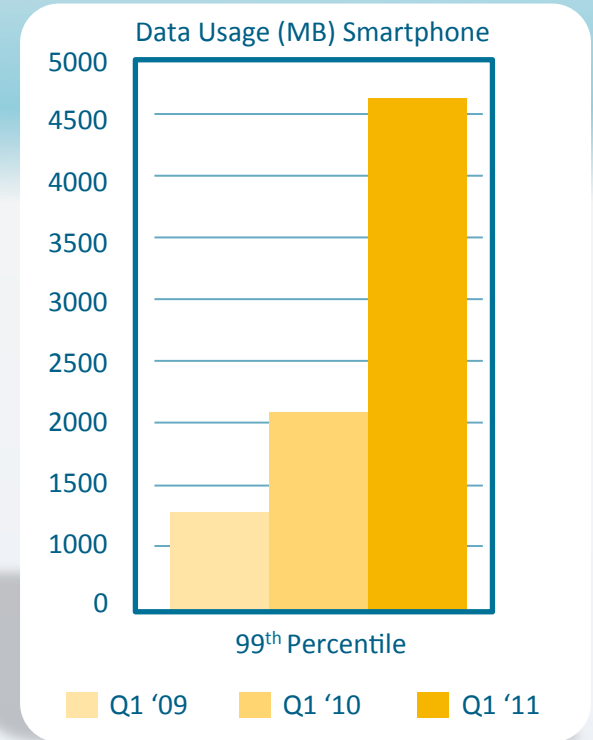
splunk >

Once you get the data, you want more



Velocity

- Top 1% data usage Q1 2011: 4.6GB
- Growing by 155% over Q1 2010
- Growth by top 1% faster than average



Customers want real-time

- Visualizations: real-time analytics
- Root cause analysis
- Enrich real-time with business meaning

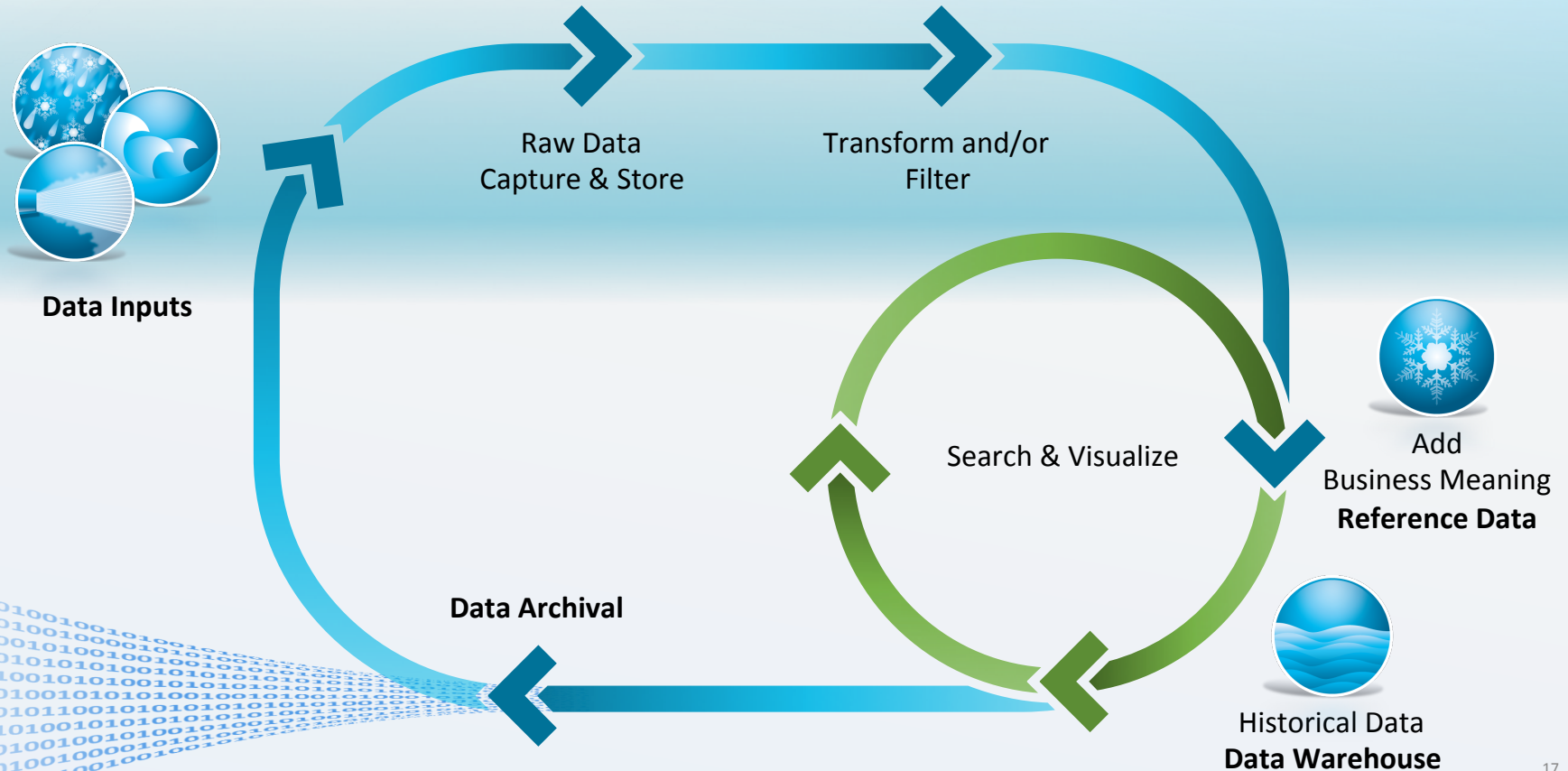


Customers realized they need...

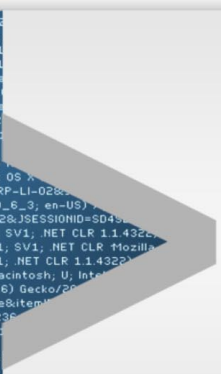
- Ask questions in real-time
- Extensible platform
- Easy to get up and running



Real-Time Data Lifecycle



```
[02/Feb/2011:16:00:23] GET /product.screen?product_id=FI-FW-0
http://www.myflowershop.com/category.screen?category_id=FLOWERS&
[02/16:00:24] GET /category.screen?category_id=TEDDY&JSESSIONID=SD9SL4FF4ADFF8 HTTP 1.1 200 3439 Windows NT 5.1
[02/16:00:25] GET /oldlink?item_id=EST-158&JSESSIONID=SD4SL5FF2ADFF1 HTTP 1.1 400 2502 GET /cart.do?action=purchase
http://www.myflowershop.com/product.screen?product_id=RP-LI-02- Googlebot/2.1 ( http://www.googlebot.com/bot.html) 105163.2
[02/16:00:25] GET /oldlink?item_id=EST-17* Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_6_3; en-US) AppleWebKit/533.4
http://www.myflowershop.com/cart.do?action=addtocart&itemId=EST-168&product_id=FI-SW-01&JSESSIONID=SD3SL8FF2ADFF4
[02/16:00:25] GET /oldlink?item_id=EST-158&JSESSIONID=SD4SL5FF2ADFF1 HTTP 1.1 400 2502 GET /cart.do?action=purchase&item
[02/16:00:25] GET /oldlink?item_id=EST-17* Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_6_3; en-US) AppleWebKit/533.4
http://www.myflowershop.com/category.screen?category_id=FLOWERS&JSESSIONID=SD6SL4FF3ADFF4 HTTP 1.1 200 3
[02/16:00:24] GET /category.screen?category_id=GIFTS&JSESSIONID=SD1SL6FF3ADFF8 HTTP 1.1 406 1852 Mozilla/5.0 (Ma
[02/16:00:24] POST /category.screen?product_id=RP-LI-02- Googlebot/2.1 ( http://www.googlebot.com/bot.html) 105163.2
http://www.myflowershop.com/product.screen?product_id=FI-SW-01&JSESSIONID=SD3SL8FF2ADFF4 HTTP 1.1 200 3439
[02/16:00:24] GET /category.screen?product_id=FI-SW-01&JSESSIONID=SD3SL8FF2ADFF4 HTTP 1.1 200 3439 Windows NT 5.1, SV1, NET CLR 1.1.4322.5
[02/16:00:24] GET /category.screen?category_id=TEDDY* Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1, SV1; NET CLR 1.1.4322.5)
http://www.myflowershop.com/category.screen?category_id=FLOWERS&JSESSIONID=SD6SL4FF3ADFF4 HTTP 1.1 200 3439 Windows NT 5.1, SV1, NET CLR 1.1.4322.5
[02/16:00:24] POST /category.screen?category_id=TEDDY&JSESSIONID=SD9SL4FF4ADFF8 HTTP 1.1 200 3439 Windows NT 5.1, SV1; NET CLR 1.1.4322.5
[02/16:00:24] POST /category.screen?category_id=TEDDY* Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1, SV1; NET CLR 1.1.4322.5)
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[02/16:00:25] GET /oldlink?item_id=EST-17* Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_6_3; en-US) AppleWebKit/533.4
http://www.myflowershop.com/product.screen?product_id=RP-LI-02- Googlebot/2.1 ( http://www.googlebot.com/bot.html) 105163.2
[02/16:00:25] GET /oldlink?item_id=EST-17* Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_6_3; en-US) AppleWebKit/533.4
http://www.myflowershop.com/cart.do?action=addtocart&itemId=EST-168&product_id=FI-SW-01&JSESSIONID=SD3SL8FF2ADFF4
[02/16:00:25] GET /oldlink?item_id=EST-158&JSESSIONID=SD4SL5FF2ADFF1 HTTP 1.1 400 2502 GET /cart.do?action=purchase&item
[02/16:00:25] GET /oldlink?item_id=EST-17* Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_6_3; en-US) AppleWebKit/533.4
http://www.myflowershop.com/category.screen?category_id=FLOWERS&JSESSIONID=SD6SL4FF3ADFF4 HTTP 1.1 200 3439 Windows NT 5.1, SV1, NET CLR 1.1.4322.5
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[02/16:00:24] GET /category.screen?category_id=TEDDY* Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1, SV1; NET CLR 1.1.4322.5)
http://www.myflowershop.com/category.screen?category_id=FLOWERS&JSESSIONID=SD6SL4FF3ADFF4 HTTP 1.1 200 3439 Windows NT 5.1, SV1, NET CLR 1.1.4322.5
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[02/16:00:24] POST /category.screen?category_id=TEDDY* Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1, SV1; NET CLR 1.1.4322.5)
http://www.myflowershop.com/category.screen?category_id=GIFTS&JSESSIONID=SD1SL6FF3ADFF8 HTTP 1.1 406 1852 Mozilla/5.0 (Macintosh; U; Intel
```



Customer Examples

Visualizations: Real-time + historical analytics



- 11.4 BN Euros in Revenue & 50,000 employees
- Operates in retail, financial services & logistics
- **Need:** Visualizations that drive business & operational value

Visualizations: Real-time + historical analytics

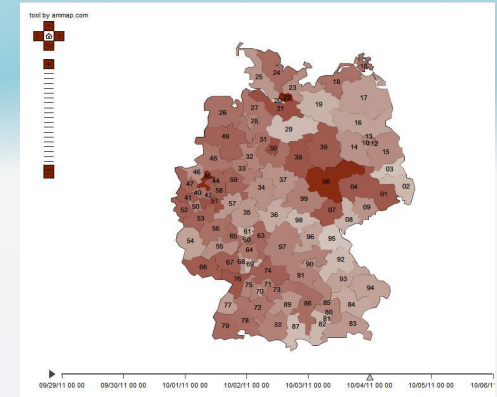
otto group



Mobile KPI app



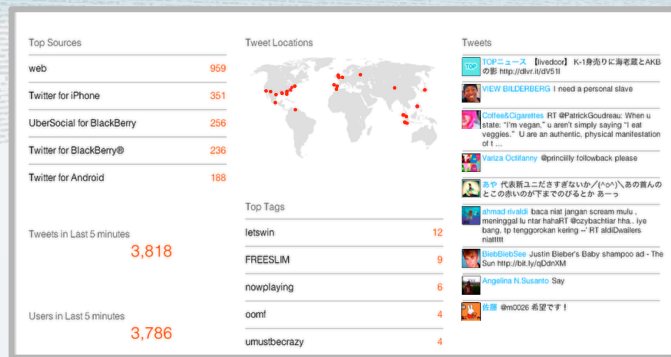
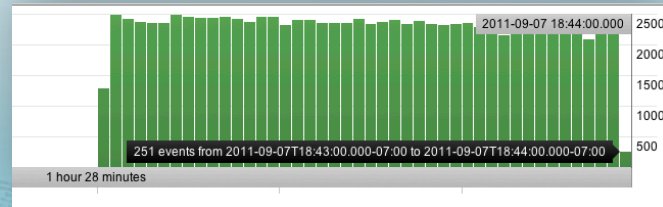
Top seller list
by hour



Weather sales
impact (by day)

Demo: Visualizations

- Browser-side development
- Custom & 3rd party integrations



Lookups: Root Cause Analysis



- \$25 billion revenues & in 26 countries
- Already using Splunk to find missing orders
- **New need:** Find out why orders went missing

Demo: Enabling Real-Time Root Cause Analysis



- Process and store data using Splunk
- Lookup bad message bus data in Cassandra
- Visualize all data in Splunk UI
- **Impact:** Improved operational visibility

Enriching operational data with business meaning



Real-Time Reference Data Updates

- \$2BN in revenues & 4,300 employees
- Indexing over 500 GB/day in Splunk
- **New need:** Enrich data with phone numbers



cricket[®]
communications



MUVE MUSIC IS NOW
ANDROID POWERED

UNLIMITED
SONG DOWNLOADS
RINGTONES & RINGBACK TONES
NATIONWIDE TALK, TEXT, & WEB
+ ANDROID POWER

Introducing iPhone Offer
Save \$40
SHOP NOW >

Plus Get a FREE Speaker

Unlimited Music with
MUVE MUSIC

Android Smartphones
for \$99.99

BlackBerry Curve with a
FREE Case

Save 50% on a touch
phone



Demo: Enabling Real-Time Business Context

- Manage MySQL using Splunk
- Update lookup table from Splunk based on data already in Splunk
- Dynamically lookup phone numbers based on changing IP numbers
- **Impact:** Better understand end user behavior

splunk > + MySQL



What about batch?

- Monitoring Hadoop
- Data integration
- Working with Hive

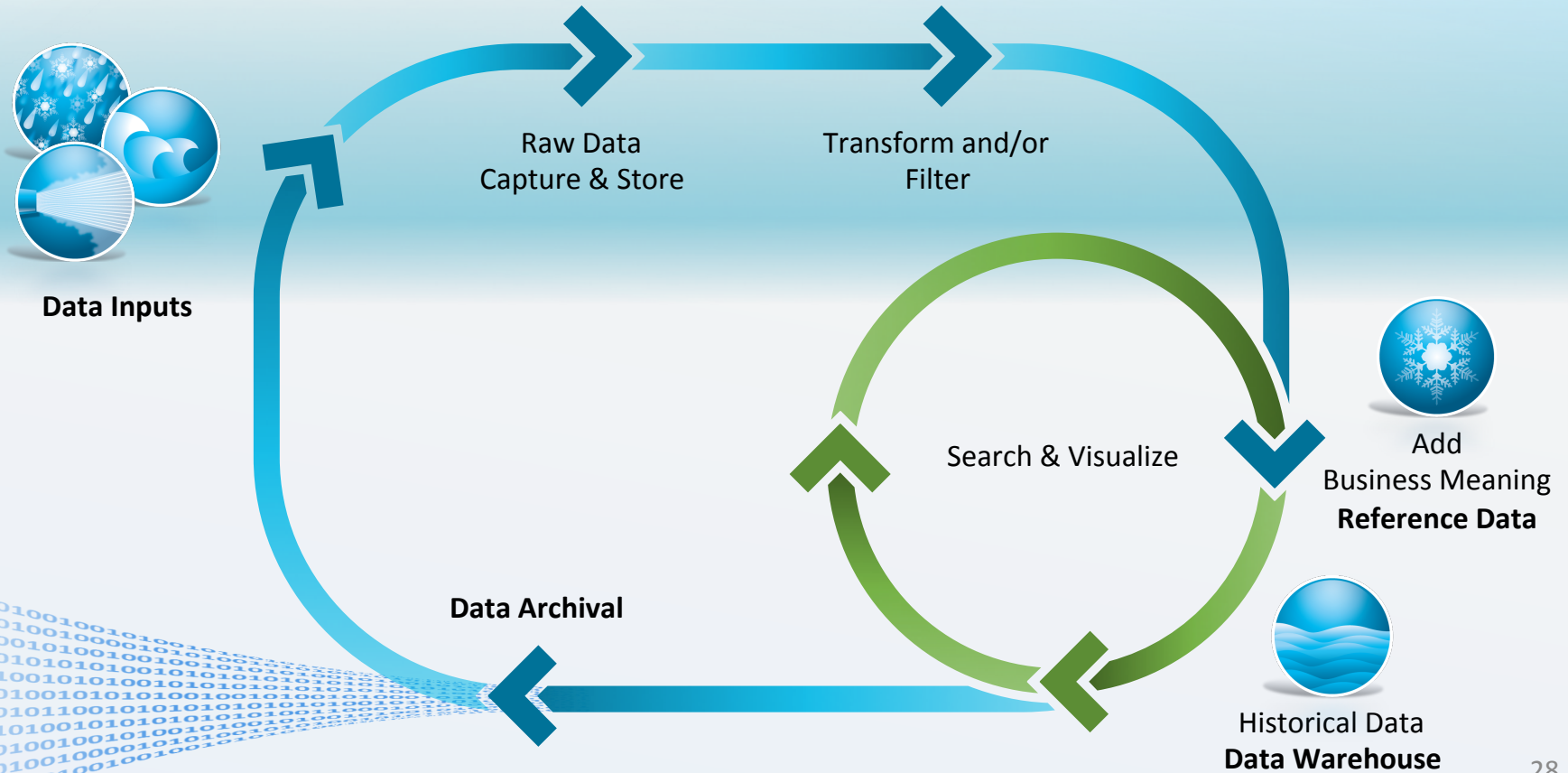


splunk>

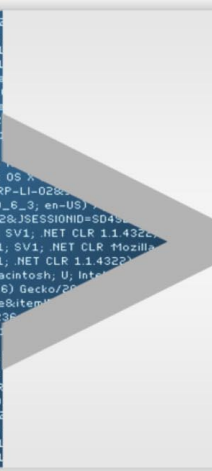
+



Real-Time Data Lifecycle



```
... [02/Feb/2011:16:00:23] GET /product.screen?product_id=FI-FW-01...
http://www.myflowershop.com/category.screen?category_id=FLOWERS... Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1;
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http://www.myflowershop.com/product.screen?product_id=EST-158;JSESSIONID=SD4SL5FF2ADFF1 HTTP 1.1 400 2502 GET /cart.do?action=purchase
11.2 -- [02/Feb/2011:16:00:20] POST /category.screen?product_id=RP-LI-02- Googlebot/2.1 ( http://www.googlebot.com/bot.html) 105163.2
22.4 63866.35.250.203 -- [02/Feb/2011:16:00:21] GET /product.screen?category_id=FLOWERS&JSESSIONID=SD6SL4FF3ADFF4 HTTP 1.1 200
http://www.myflowershop.com/oldlink?item_id=EST-17- Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_6_3; en-US) AppleWebKit/533.4
http://www.myflowershop.com/cart.do?action=addtocart&itemId=EST-168;product_id=FI-SW-01;JSESSIONID=SD3SL8FF2ADFF4 HTTP 1.1 200 3439
Gecko) Chrome/5.0.375.38 Safari/533.4 22463.228.251.81 -- [02/Feb/2011:16:00:23] GET /product.screen?product_id=RP-LI-02&JSESSIONID=SD4SL5FF2ADFF1
:200 2108 http://www.myflowershop.com/category.screen?category_id=TEDDY; Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_6_3; en-US) AppleWebKit/533.4
Chrome/5.0.375.38 Safari/533.4 1971187.231.45.62 -- [02/Feb/2011:16:00:23] GET /product.screen?product_id=FI-FW-028;JSESSIONID=SD4SL5FF2ADFF1
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[02/16:00:24] POST /category.screen?category_id=TEDDY&JSESSIONID=SD3SL4FF4ADFF8 HTTP 1.1 200 3439 Windows NT 5.1; SV1; NET CLR Mozilla
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[02/16:00:25] GET /oldlink?item_id=EST-158;JSESSIONID=SD4SL5FF2ADFF1 HTTP 1.1 400 2502 GET /cart.do?action=purchase&itemId=EST-168;product_id=FI-SW-01;JSESSIONID=SD3SL8FF2ADFF4
http://www.myflowershop.com/product.screen?product_id=RP-LI-02- Googlebot/2.1 ( http://www.googlebot.com/bot.html) 105163.228.251.81
[02/16:00:20] POST /category.screen?product_id=EST-17- Mozilla/5.0 (Macintosh; U; Intel Mac OS X 10_6_3; en-US) AppleWebKit/533.4
[02/Feb/2011:16:00:21] GET /product.screen?product_id=FI-SW-01;JSESSIONID=SD3SL8FF2ADFF4 HTTP 1.1 200 3439 Windows NT 5.1; SV1; NET CLR Mozilla
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11.2 -- [02/Feb/2011:16:00:21] GET /product.screen?product_id=FI-SW-01;JSESSIONID=SD3SL8FF2ADFF4 HTTP 1.1 200 3439 Windows NT 5.1; SV1; NET CLR Mozilla
http://www.myflowershop.com/cart.do?action=addtocart&itemId=EST-168;product_id=FI-SW-01;JSESSIONID=SD3SL8FF2ADFF4 HTTP 1.1 200 3439 Windows NT 5.1; SV1; NET CLR Mozilla
22.4 63866.35.250.203 -- [02/Feb/2011:16:00:23] GET /product.screen?product_id=FI-FW-028;JSESSIONID=SD4SL5FF2ADFF1 HTTP 1.1 400 2502 GET /cart.do?action=purchase&itemId=EST-168;product_id=FI-SW-01;JSESSIONID=SD3SL8FF2ADFF4
http://www.myflowershop.com/category.screen?category_id=FLOWERS; Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; NET CLR Mozilla
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Dev Platform & Partners

Steve Drain
MarQuest



MarQuest: InterMapper App

- Using Splunk as a data platform
- Network monitoring solution
- Real-time network mapping and alerting



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www.myflowershop.com/product.screen?product_id=EST-158;JSESSIONID=SD4SL5FF2ADFF1 HTTP 1.1 400 2502 GET /cart.do?action=purchase
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Like what you heard?

Enabling Developers in 2012

SDKs GA in FY13

Java, Python, JavaScript, Ruby

Amazon Web Services

automate install, config & scale

Build awareness & community
through events & online

The screenshot shows the 'splunk dev' website. At the top, there are navigation links for 'Concepts', 'App Framework', 'REST API', 'SDKs', and 'Open Source'. A search bar is on the right. Below the navigation is the heading 'Splunk for Developers' and a brief description of the developer platform. There are three main sections: 'Build Big Data Applications' with a diagram showing reports, applications, and data; 'Extend & Enhance Splunk' with a diagram showing a Splunk instance and a custom app; and 'Develop Using Splunk' with a diagram showing a development cycle from code to production. Each section includes a short paragraph of text.

Getting Started

- Free Beer: Thursday: 5-8pm - <http://www.meetup.com/Splunk/London-GB/602452/>
- Web: <http://dev.splunk.com>
- SDKs @: <http://github.com/splunk>
- Twitter: @splunkdev
- Email: psanford@splunk.com

